

A Value Proposition Development Framework For Industrial Service

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Abstract

Value proposition is a key concept in the research on service and in the practice of service management. Value propositions are described as tools to communicate and motivate a joint value creation opportunity among involved organizations and stakeholders. The future orientation and intangibility of service places value proposition as the key element of competitive service business. However, the concept of value proposition is often vaguely defined, the underlying theoretical concepts missing, and the managerial practices to create value propositions unexplored. This study investigates how value-focused industrial companies build value propositions by conducting customer value research. Building on our findings, we suggest theoretical and managerial frameworks for value proposition development.

1. Introduction

Value proposition is a key concept in the research on service and in the practice of service management. Value propositions are described as tools to communicate and motivate a joint value creation opportunity among involved stakeholders and organizations [2,4,16,25,39,40]. Value propositions are crafted, adapted, communicated, quantified, and verified to initiate and sustain business relationships. Strong change drivers amplify the importance of value propositions. The future orientation, digitalization, and intangibility of service exchange highlight the importance of the value proposition as a key element of service business. Business strategies, value creation, and differentiation are also increasingly building on recognizing and effectuating novel business opportunities, as opposed to leveraging protected industry position or differentiated capabilities and resources, and building

on skillful development and effective communication of value propositions [11,17].

Despite widespread use of the term, the existing literature provides rather high level definitions of value proposition (see a review in [4]). Further, the actual managerial practice to develop value propositions is largely unexplored. Business books [5,23] provide insights, but do not build on the academic work on value proposition and customer value. Hence, this study explores the industrial managerial practices to develop customer-oriented value propositions by conducting value research. The study derives theoretical and managerial frameworks to guide value proposition analysis and development.

After the introduction, we review the literature on the theoretical foundation of customer value, value proposition design, and customer value research. Section three describes the research process and the methods used. Section four presents the empirical findings. The last section discusses the findings and conclusions of the study and offers suggestions for future research and implications for research and practice.

2. Theoretical Background

Value propositions are described as communication devices indicating how the parties involved could create value by integrating their respective resources and capabilities. Value propositions are crafted, adapted, quantified, and verified during the buyer-seller interactions [33] within a dynamic value creation configuration (“service system”) of resources, capabilities, and technology, which are all connected internally and externally to other service systems by value propositions [40]. Previous research has established several characteristics of value propositions, two of which are highly relevant here: Value propositions address specific stakeholders’ salient business goals, e.g. [20], and communicate bundles of value creating changes toward those goals [2]. Industrial value

propositions frequently specify a number of value creating changes (such as energy savings, quality improvements, capacity improvements, and similar) and their aggregate, qualitative or quantitative impact on specific goals (such as cost savings, risk reduction). For some illustrative examples of industrial value propositions, see, for instance [26].

In business marketing literature, customer segmentation, customer value research, value proposition development, value communication, and value verification are considered as essential supplier-driven elements of value-based service, e.g. [31,33]. In line with our research focus, we review the literature on value propositions and customer value research, and then focus on customer value research as a method to build effective value propositions. To understand the role of value proposition in the buyer-seller interactions, we focus next on the essential elements of the customer-driven evaluation of value propositions.

2.1 Customer value

Value propositions communicate customer value, and build on the concept of customer value. Research has described customer value as subjectively evaluated and experienced in a specific context, and defined as a trade-off between perceived benefits and sacrifices [19]. Further, research has offered a number of different conceptualizations for the benefits and sacrifices, e.g. [24,26,27,37].

While the different conceptualizations emphasize different strategic, operational, social, and symbolic aspects of customer value, all the conceptualizations however define the benefits and sacrifices as multi-dimensional and hierarchical structures. Hence, based on our literature review, we conclude that a stakeholder's subjective and contextual assessment of a value proposition is based on assessing the change communicated by the value proposition along the different benefit and sacrifice dimensions relative to the goals of the stakeholder.

2.2 Value proposition evaluation

In line with [26], we model value proposition evaluation by building on three key concepts. A stakeholder's *value conception* is the collection of all those benefit and sacrifice dimensions that a stakeholder recognizes and is willing to consider as having value creation potential. *Value preference* is a contextualized subset of value dimensions from the value conception ($V_p \subset V_c$), defining what the stakeholder finds relevant and valuable in a given value proposition evaluation situation. The stakeholder performs *value selection* from the value

conception to arrive at the value preference (see also definition of Customer Desired Value in [12]). Finally, *value perception* is the result of the assessment of the value preference, i.e. "how much" value the stakeholder perceives to receive along the different value dimensions. Value assessment aims to create tangible evidence of value, qualitative or quantitative, ideally quantified in terms of the stakeholder's goal metrics (key performance indicators) [15]. Figure 1 illustrates the relationship between these concepts.

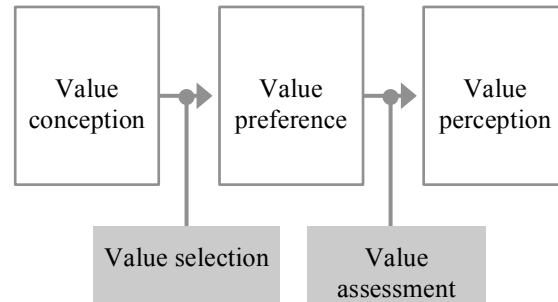


Figure 1. The relationship between customer's value conception, value preference, and value perception.

Different stakeholders may hold greatly varying beliefs and ideas about what is potentially valuable in a given situation. For instance, potential value dimensions of a car include performance, comfort, social status, aesthetics, ownership cost, environmental, and similar dimensions and their sub-dimensions. Stakeholders' value conception may consist of any combination of these, depending on their preferences and "value awareness". Clearly, a stakeholder may be aware of the potential benefits of a powerful engine in a car, but may rule against those benefits based on personal preferences and values. Value conception and value perception are thus highly individual, yet influenced by industry norms, corporate culture, and individual history and beliefs. Hence, value conceptions between professional roles and business ecosystem members may be very different. Specifically, buyers and sellers may have only limited overlap between their conceptions and preferences, and conceptions may be very narrow, limiting and complicating value proposition communication, evaluation and generally the discovery of joint value creation opportunities, as illustrated in [34]. For instance, the initial purchase price of an industrial investment represents only about 8%-12% of the life-cycle costs of the lifecycle operating costs [30]. Clearly, a purchase decision based on the initial acquisition cost may be unwise.

A broad and holistic shared value conception would bring all prospective value dimensions into consideration. Then, understanding the value creation potential of all the relevant value dimensions included in the value conception has potential to result in a comprehensive value preference. Finally, the ability to quantify the value potential of each of the value dimensions included in the value preference would provide the best measure for value creation.

The above observations help further defining the role of value proposition as a value communication device. To communicate and motivate a value creation opportunity, value proposition seeks to influence the stakeholder's cognitive process from value conception to value perception during the buyer-seller interactions.

2.3 Value proposition scope

Scope is a key attribute of value proposition, and a driver of value research. In industrial service context the suppliers are expanding the scope ("servitizing") of their business models, offerings, capability and resource base, and hence their value propositions from communicating equipment functions to communicating equipment availability to equipment performance to business process improvement, and further to business process performance [29,38]. Each of these expanding scopes implies a greater commitment toward customer's business goals: Selling performance is more than selling availability. The expanding scopes of value propositions potentially include a "bigger bundle of benefits" as the value creating dimensions, and hence address a larger share of the customer's value preference. Frequently, the expanding scope has also important consequences for the roles and responsibilities of the organizations by redefining organizational boundaries by reallocating value creating activities among the ecosystem members [22].

The following statements summarize our review of industrial value propositions [1,2,4,15,19,26]. Value propositions communicate ¹*bundles of benefits*. Value propositions address a number of value dimensions included in the stakeholder's value preference by communicating how value is created by increasing benefits or decreasing sacrifices. In an industrial context improving equipment availability, equipment performance, output quality, energy and resource efficiency, by gaining access to

complementary resources, and similar changes along a multitude of other value dimensions can create value.

Value propositions address customer's *business goals*. The benefits communicated by the value proposition need to address salient business goals to create interest and urgency. The *scope* of value propositions extends from product provision to comprehensive outcome agreements, reflecting the mutual re-allocation of resources and capabilities. Value propositions offer *significant value* to the customers. The stakeholders need to find the value dimensions communicated significant and attractive. Ideally, the value dimensions are either quantifiable or otherwise assessable by the stakeholders. Value propositions support supplier *differentiation*. The value dimensions communicated are selected to draw on supplier's strengths.

Now, we turn to exploring *the managerial practices the industrial firms use to create value propositions* by analyzing their customer's situations and business operations.

2.4 Customer value research

Literature describes customer value research as an activity to understand and analyze customer activities to identify opportunities for creating higher use value for the customer, e.g. [2,26].

Practical techniques for performing customer value research include customer value audits [36], customer value analysis [21], job mapping [6], field value assessment [1], and analysis of customer's business process, drivers, and goals [32]. As an example, the field value assessment goes out to isolate and list value elements (value dimensions) that affect the costs and benefits of an offering in use, and during the entire lifecycle of the offering. In line with Bettencourt and Ulwick [6], Österwalder, Pigneur, Bernarda and Smith [23] use customer's job mapping as a starting point in their value proposition design process.

3. Methodology and Cases

To explore value proposition development practices in business markets, which is a relatively under-researched area [25], we used a qualitative multiple case study research approach [9,10], which allows us to delve deep into the firms value proposition development practices in several contexts [42]. We used a purposive sampling logic [10], and engaged with six progressive industrial firms who have already made significant investment in their value-focused capabilities. By selecting relatively

¹ We portray the use of value proposition as a supplier-driven activity. The actual value proposition development and adaptation is often a joint effort between suppliers and customers, as Ballantyne et al. (2011) point out.

mature firms in terms of research phenomenon, we were able to explore already established practices and draw insights from firms' experiences with developing these practices [7]. All the case firms qualified to join the study by participating in large value-focused industry-academia research programs in 2013-2016 and 2015-2017, which focused on managing value-based business relationships in business markets (most of the firms participated in both programs).

During a period of 18 months, from Oct 2013 to Sep 2014, we conducted 26 individual interviews lasting approximately 90 minutes with the representatives of Case A and Case E. In addition, observations from altogether eleven group sessions (eight sessions involving cases A, B, C, and E, and three session with A and one of the cases B, C, and D) were collected and analyzed. Each session included several representatives from each of the participating companies. The themes of the group sessions covered key areas of value-based service, especially value proposition development. Then, during 2016 we conducted additional interviews in all case companies, specifically focusing on value proposition design and customer value research. In addition to this primary data, we collected and analyzed documents and observations from meetings with the representatives of all cases. We also reviewed and analyzed an extensive set of secondary data, including company presentations, brochures, offers, marketing material and material published on the company websites. The key characteristics of the participating companies are described in Table 1. The primary data column indicates the number of interviews and focus group participations.

3.1 Data Analysis

We searched the data collected from the interviews for expressions relating to value proposition development, and coded our findings under the emerging key themes. The themes identified were "Gaining customer insight", "Business process analysis", "Understanding business goals and drivers", "Value proposition development", and "Value communication". The data were organized into blocks of homogeneous content, which were further classified and compared. Initially, we identified 180 blocks of data relating to the themes. The division of the data was conducted in a spreadsheet by placing the individual interviewees in the rows and the analysis topics on the columns of the sheet, creating a comparison matrix. The comments of each interviewee were then compared with each other within the same company and across companies, forming findings concerning each given

topic of the study. The analysis of the focus group meetings was conducted similarly, but labeling the comparison matrix rows by the participating company names. Finally, we included the "Value communication" theme into the "value proposition design" theme to arrive at the four key elements of the value proposition design.

Table 1. Case description

Cases	Case description	Sales (M€)	Staff	Primary data
Case A	A globally operating equipment and service provider.	6 300	40 000	6 + 8
Case B	A global provider of large industrial solutions and lifecycle services.	2 100	4 800	6 + 8
Case C	A large provider of technology and industrial services.	7 500	30 200	3 + 8
Case D	A recognized provider of industry-specific technical solutions and services.	1 000	2 700	1 + 1
Case E	A large global provider of industrial products and services.	7 500	44 100	21 + 8
Case F	A global provider of industrial production tools	110	600	2

4. Findings

We structure and illustrate our findings according to the four key themes discovered during the data analysis. The labels refer to case companies and informants.

4.1 Gaining customer insight

The case companies build customer insight with a number of different and complementing methods. First, the case companies implement on-site field observation studies of the key customer's activities:

Our industrial design-team travels the world to observe in practice the common ways of doing things. How the welder welds in India, for example (F:1).

Second, the case companies improve their absorptive capacity, capability, and resource base by knowledge transfer: The case companies recruit key

competence from the industry to gain access to critical knowledge:

We try to hire product managers that have industry-knowledge. Not just from welding, but robotics, shipyards, machine workshop, etc. So that they have that understanding of the customer's and customer's customers world. (F:1)

Third, the case companies leverage their services resources. Professional services provide access to customer's operations:

We have made our consulting service very affordable, so that we can get inside the customer's organization (D:2)

Our service agreements give us a great access to understand customer's processes and associated challenges (C:1)

Fourth, the case companies organize focus groups, facilitated workshops supporting knowledge integration:

We arrange workshops with our key customers, brainstorming improvement opportunities for customer's processes. We usually use external facilitator for these sessions (C:1)

We do more focus groups every year (F:1)

4.2 Business process analysis

Value propositions are developed for specific customer segments and specific stakeholders within the segment.

Traditionally we've worked with the purchasers, but now we've clearly moved towards operations.(D:1)

The value proposition development builds on an analysis of the business processes of the target segments and stakeholders. The case companies analyze their customers' business activities, ranging from stakeholder-specific business processes to industry-wide processes. Quotations from the case companies illustrate this activity.

We have begun building it piece by piece after noticing the customers' problems and then looked at what causes them." (C:1)

I personally described the roles of builder and architect, documenting process stages, stage-specific goals and challenges (A:2).

If we are trying to sell B something, we really need to understand what they do (F:1).

The basic idea has been to understand the whole, try to identify the bottlenecks and then go deeper from there (C:1).

To succeed, it is not sufficient to understand you direct customers, you need to understand their business realities (F:1)

The case companies A and C have documented and built IT tools describing segment, stakeholder, and industry specific business process models.

Our approach is that we've drawn a process flow-chart of some sort and then gone through it asking "do you do it like this?". And then they tell us (D:2).

4.3 Understanding business goals and drivers

A fundamental driver for any business and any stakeholder is to achieve the goals assigned to them. Hence, it follows that stakeholders measure value creation in terms of goal achievement. The following extracts emphasize the link between value creating changes and business goals and drivers. The extracts also illustrate different goals and drivers.

... listening to the customer and really getting to the core of what they're looking to do and what drives them, what their targets are and how they work, and how we can work with that. Without that information it's very difficult to communicate value in a substantial way" (A:4)

We're selling from people to people and we try to understand this individual person's needs, his motivations and aspirations. (A:3)

4.4 Value proposition development

When analyzing value proposition development, we further identified three sub-themes, value proposition structure, value selection, and value communication.

Value proposition structure: The fundamental reason for the case companies to understand their customer's situation, activities, and business process is to systematically innovate improvement opportunities, value creating changes in processes, capabilities, and resources. The following quotes illustrate the business process analysis and the expected outcomes:

We are continuously researching the container-handling process for improvement opportunities (D:1).

Our idea has been that we want to understand how you do things so that we could identify from there those areas where with small changes we could get the largest possible effects (D:2)

We have studied the industrial welding process, whether the practice actually complies with the welding standard, whether the welders have the right competence, raw materials. (F:1)

Does it save time, raw materials, or man-hours, does it improve workflow, or reduce risks? (F:1)

The following example from the case company B illustrates typical elements of an industrial value proposition.

We promote modernizing our customer's existing copper recovery process equipment by showing the revenue and cost impact of our modernization service by improving metal recovery percentage, and reducing electricity and maintenance costs (Case B).

Industrial value propositions are frequently built around value statements [25], which describe value creating changes along different value dimensions (i.e. increase the benefits and/or decrease the

sacrifices), and the expected impact on customer's goals (i.e. revenue increase and cost reduction).

Aggregating value into a single number is challenging especially if generating that number is a complex process. I think the customer needs to be walked through a story, so that they can understand the individual value elements one at a time. The significance of the value creation potential can then be discovered together in the end. (A:1)

Value selection: The business process analysis potentially generates a large number of improvement opportunities. Therefore, value proposition development involves prioritization, i.e. selecting those few improvement opportunities, which can be effectively communicated. A representative from case A illustrated an outcome of 47 distinct improvement opportunities from a specific analysis process, and stating that only three of those could be included in the resulting value proposition. Hence, value proposition development involves value selection. Previous research has identified several criteria for performing value selection. First priority is the quantifiability of the improvement opportunity.

"Quantifying value is critical. It's absolutely critical whether it's total cost of ownership, whether it's risk, whether it's safety, whether it's regulations, or whether you're making some safety upgrades." (A:3)

Actually this is mostly just understanding that value, the experience of value in the customer's head. (D:1)

Previous research also suggests additional criteria. Anderson and colleagues [1,2] suggested selecting those improvement opportunities that help in differentiating from alternatives. Focusing on those improvement opportunities that are already on a stakeholder's agenda create receptivity; however, stakeholders may not be receptive to the most promising improvement opportunities. Industrial norms and imitation create shared value preferences among industrial stakeholders, and often outdated beliefs steer action: Procurement often focuses on price instead of cost [3].

Their definition for a total-cost-of-ownership only includes item price and delivery cost. (E:1)

We find that the industrial buyers' and sellers' deviating value preferences and the underlying value conceptions complicate the joint value discovery.

Further, we find that the improvement opportunities revealed by the business process analysis generally fall into two categories. Stakeholders are receptive to those improvement opportunities, which are already a part of the stakeholder's value preference or value conception. Involving customers in the innovation process by focus groups and other identified cooperation mechanisms reveal improvement opportunities that are supported by the customers' prevailing focus and mindset. Those improvement opportunities, which

may be more radical, innovative, and unconventional, may not be seen, accepted, or valued. See, or instance, [14]. Our findings indicate that the value research conducted by our case companies frequently identify innovations, which the stakeholders may not be receptive to.

When we try to milk those problems from the customer, they cannot see them. They keep looking so damn close. (C:2)

Value communication: A key challenge in value proposition design is to manage the tension between relevance and practicality. Ultimately, a relevant value proposition seeks to influence individual stakeholders by resonating with their value preference. Practically firms can only pre-develop value propositions for specific pre-defined segments, stakeholder groups, and products. The potential gap between the segment-specific value propositions and individual preferences is managed during the buyer-seller interactions by either adapting value proposition or influencing the stakeholders' value conceptions and value preferences.

"It's the sort of [tool] where you can dig in the direction of customer specific value and (show) that this kind of value we can provide for our <...> customers in the <...>-segment. (E:1)

All of the case companies are in a process to develop advanced software applications to support effective value proposition communication by embedding value propositions into sales tools in the form of reference stories, value calculators, and stakeholder-specific conversation guidelines. For instance, the case A has built a sales tool, which supports the buyer-seller interactions through the sales process. The case D has developed a tool to estimate and report the yearly potential of revenue increase as a result from optimal container loading.

A seller's support material includes a tool that ... by choosing a few market segments, customer segments and our business line. Then you get value drivers for this sort of customer type, on a global scale, and ... it gives feature-benefit value maps. (E:1)

We do a technical calculation, calculate the benefits, calculate energy consumption, do a total cost of ownership (calculations). It all becomes an appendix of the proposal. (A:1)

Then we have a few of these value-calculators. Even online. (A:1)

But truly, the sellers are equipped with that full set and trained and we know how to make that calculation and go there on site to those first cases to do that calculation with the customer. Otherwise it doesn't work. (A:1)

Finally, the value proposition communication step acknowledges the potential differences in the views, perceptions, and goals of stakeholders. Once the value communication has created an incentive to change, and the prospective improvement

opportunities have been selected, the final objective during buyer-seller interactions is to influence the customer's vision of the actual solution. Even if the value proposition itself would be attractive to a stakeholder, the supplier's solution may not be; any problem can have more than one solution.

Then (in case of new technology) we must spend a lot of time to verify it. -- You get that validation from having a physical model and digital model. -- several presentations, simulations in different venues we showed that we've developed this much... (A:1)

5. Discussion and analysis

This study explored the industrial value proposition development as a systematic method for creating compelling value propositions, based on customers' business process analysis. The empirical investigation used six cases that represent globally operating industrial companies, which are all making significant investments in building value-focused strategies. The cases were complementary and their analysis suggested a theoretical basis for value proposition development method, which we discuss in the theoretical implications, and managerial framework, which we outline in the managerial implications.

First, our findings contribute to the scholarly discussion of customer value, value proposition design, and methods to build and communicate value propositions. Second, our study brings clarity to the value proposition concept. Frow and Payne [13] surveyed the use of value propositions in organizations and found that although the term was used by majority of the firms, only less than 10% had developed and routinely communicate formal value propositions. Our results suggest a more tangible definition for an industrial value proposition, and identify four key stages of value proposition development to support managers in building effective value propositions. Third, we also shed light on the current institutional difficulties between industrial buyers and sellers to integrate their resources and capabilities to leverage their joint value creation potential. Generally, industrial value propositions are based on leveraging the capability and resource heterogeneity among business ecosystem members. However, industrial buyers have strong institutionalized beliefs and norms, which often manifest a narrow conception of value, limiting their receptivity to novel value creation opportunities. Value propositions grounded in the customer's business activities, and convincing demonstration of innovative value creation opportunities may expand value conceptions and value preferences of all

involved parties, and accelerate the progress toward higher value creation.

5.1 Theoretical implications

We draw from organization theory in building our analysis of value proposition development [28], by analyzing value creation from a stakeholder goal achievement perspective. Stakeholders assess value creation opportunities against their goals. Goal achievement is impeded by challenges and supported by improvement opportunities. We denote these as value creating changes. A solution implied by a value proposition implements the value creating changes to help achieving the goal. The impact of a solution on the goal is determined by value assessment. The Figure 2 illustrates the logic.

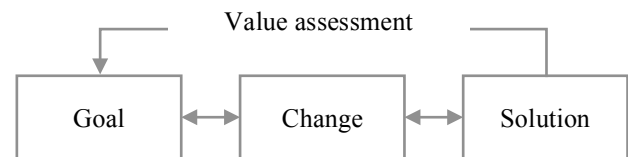


Figure 2. The relationship between a goal, value creating changes, and solution

To achieve their goals, stakeholders engage in search [8] for improvement opportunities, i.e. value creating changes. The search is guided by managerial cognition, beliefs, and bounded rationality of the stakeholders [35,41]. Specifically, the evaluation of the opportunities found is affected by the stakeholders' value conceptions and value preferences, when applying value assessment process illustrated by the Figure 1. We first deepen the conceptualization of the value assessment by building on the three elementary theoretical concepts value conception, value preference, and value perception, and value selection and value assessment as the functions linking the concepts. A stakeholder's value conception V_c includes all those *value dimensions* v_i that the stakeholder finds potentially valuable. Value preference V_p is a subset of the value dimensions included in V_c . V_p is built by applying value selection. Value selection is guided by individual sensemaking, what value dimensions the stakeholder finds relevant in the given situation, given the personal preferences, beliefs, and external influences, such as organizational culture and industry norms. Value perception V_q is then created by value assessment: Value assessment is performed by evaluating the potentially value creating changes along each relevant value dimension within V_p . V_q measures the stakeholder's goal achievement, and is expressed as an appropriate key performance

indicator (such as cost saving). The Equation 1 suggests a model for value assessment.

Equation 1. Stakeholder value assessment model

$$V_q = \sum_{i=1}^n f_i(\Delta v_i)$$

In the Equation 1 n equals to the number of individual value dimensions included in the V_p , $f_i()$ is the function mediating the (eventual) value creating change Δv_i in the value dimension i into the chosen measure of the value perception V_q (such as revenue increase).

The Equation 1 implies that value creation is maximized, if all value creating changes Δv_i are included in the V_p , the Δv_i can be measured, and that their impact on V_q can be credibly assessed. Next, we analyze the value assessment by using these key concepts, and illustrate the role of a value proposition in the stakeholder value assessment.

First, stakeholders and suppliers may possess greatly deviating value conceptions, value preferences, and hence, value perceptions. Differences in value conceptions provide a valuable learning and value creation opportunity for both parties. Differences in value preferences support understanding the contextual and institutional factors affecting evaluation. The Figure 3 illustrates an example value proposition evaluation situation.

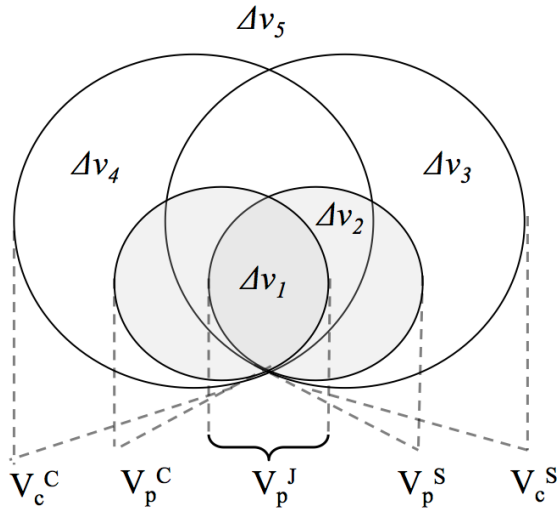


Figure 3. Supplier and stakeholder value conceptions and value preferences

The situation involves five value creating changes Δv_i . V_c^S and V_p^S denote spheres of supplier value

conception and value preference, V_c^C , V_p^C the stakeholder value conception and value preference, V_p^J their joint value preference $V_p^C \cap V_p^S$. The supplier value conception includes Δv_1 , Δv_2 , and Δv_3 . Of these, the supplier's value selection has chosen Δv_1 and Δv_2 into the value preference, and as improvement opportunities included in the value proposition. Of these, the stakeholder value preference includes only Δv_1 . Additionally, there is an improvement opportunity Δv_4 within the stakeholder value conception. Initially, only Δv_1 is mutually recognized. If the supplier can provide convincing evidence of value to support Δv_2 , the stakeholder value preference may expand to include Δv_2 , and thus improve mutual value creation. Mutual learning may help the supplier to recognize Δv_4 , and expand the supplier value conception. Symmetrically, mutual learning may help the stakeholder to discover and appreciate Δv_3 (which initially is beyond the stakeholder value conception), and further improve value creation. Finally, there may be improvement opportunities, such as Δv_5 , which neither of the parties is initially aware of. Hence, value creation opportunities may go unnoticed, if outside of the parties' value conceptions. Value creation opportunities may also go unnoticed, if deemed irrelevant in the current decision making situation. See [14] for related analysis.

Hence, our analysis indicates that deviating conceptions may severely limit joint value creation opportunities. First, if the mutual value creation opportunity would be based on value dimensions that do not belong to the current value conception or value preference of a stakeholder, the value proposition communication need to influence and expand the stakeholder's value conception and/or preference. Second, value proposition needs to support creating a value perception by value assessment. The value assessment relies on the value functions $f_i()$. In many industrial applications the impact of a process change is rather simple to measure, whereas less tangible improvements, such as safety improvements, are much harder to assess quantitatively. The challenge of linking the value creating changes to stakeholder goals is about finding the functional relationship between them. Previous literature, e.g. [26] has also explored value quantification as a method to influence value perception.

5.2 Managerial implications

Based on our findings and analysis, we conclude that value proposition development needs to identify key stakeholders and understand their goals, select

and analyze business processes to discover challenges and improvement opportunities as value creating changes, and formulate value propositions that address the stakeholder goals by implementing the value creating changes. Examples of industrial value creating changes include energy savings, quality improvement, higher production output, less unplanned downtime, and similar. Examples of industrial goals include cost savings, revenue increase, risk reduction, and similar. Value propositions seek to assess, aggregate, and communicate the goal impact quantitatively, in line with the Equation 1, by selecting the value creating changes and identifying the value functions quantifying the goal impact of the changes.

Our findings imply a step-wise managerial capability for crafting value propositions, integrating and building on the key themes identified. The case companies focus on their key customers and stakeholders when gaining customer insight. Value creation innovations are based on customer business process analysis. The stakeholders evaluate value innovations in terms of the goals. Hence, segment selection, business process analysis, and segment goal analysis are the key elements informing value proposition development. The framework is illustrated in Figure 4.

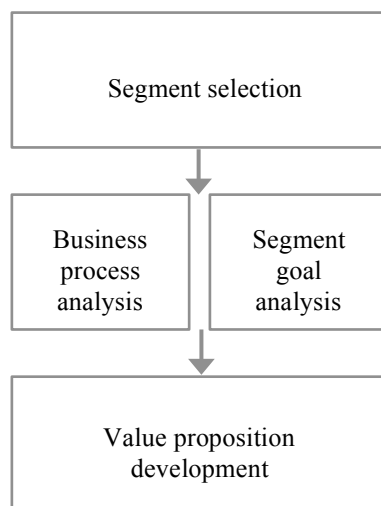


Figure 4. Key elements of value proposition development

Segment and/or stakeholder selection leads to the identification of the relevant business process for the analysis stage, as well as identification of the relevant business goals. The business process analysis typically involves decomposing the process into constituent activities (or routines), and identification, analysis, and documentation of the associated goals

and value creating changes along different value dimensions. The segment and stakeholder specific goal analysis involves understanding the contextualized business goals, metrics, and change drivers of the stakeholders. Then, the actual value proposition design focuses on selecting the most promising value creating changes by stakeholder goal impact, saliency, and supplier differentiation. Value propositions communication then leverages success stories, value calculators, and other sales tools.

5.3 Limitations and future research directions

We acknowledge that the industrial context studied may be different than many other service systems. Specifically, the industrial value propositions are frequently process oriented, whereas in IT outsourcing, for instance, value propositions may emphasize resource and capability heterogeneity [18]. Therefore, more research on value proposition development in different contexts to provide more generalizable findings would be valuable.

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